

FORAGE SUITABILITY GROUP Subirrigated

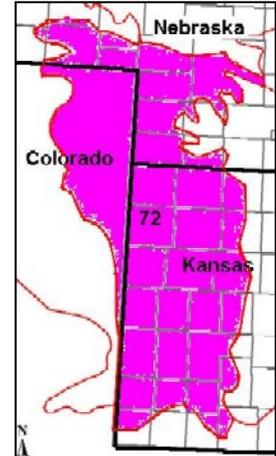
FSG No.: G072XY700KS

Major Land Resource Area: 072X -Central High Tableland

Physiographic Features

These soils are mostly found on flood plains.

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	2600	3900
Slope (percent):	0	2
Flooding:		
Frequency:	None	Frequent
Duration:	None	Brief
Ponding:		
Depth (inches):		
Frequency:	None	None
Duration:	None	None
Runoff Class:	Negligible	Medium



Climatic Features

Average annual precipitation for all climate stations listed below in MLRA 72 is about 19 inches. About 77 percent of that precipitation falls during the months of April through September. On average there are about 24 days during that period that receive greater than .1 inches. Precipitation is less than needed for optimum forage production and is the single largest factor limiting production from this group on non-irrigated lands.

Average annual snowfall ranges from 17 inches at Syracuse, KS, to 37 inches at Lodgepole, NE. Snow cover at depths greater than 1 inch range from a low of 6 days per year at Burlington, CO to a high of 41 days at North Platte, NE.

Average January temperatures are about 28 degree F., and average July temperatures are about 77 degrees. Recorded temperature extremes for the listed climate stations during the years 1961 to 1990 are a low of -34 recorded at three Nebraska and one Kansas locations and a high of 113 recorded at Healy, KS. The MLRA lies in USDA Plant Hardiness Zones 5a, 5b, and 6a.

It is cloudy an average of 143 days a year at Goodland, KS. Average annual wind speeds are about 12.5 MPH with the highest averages occurring during the spring. Average morning relative humidity in June is about 82 percent and average afternoon humidity in June is about 42 percent.

The climate data listed in the tables below represent high and low ranges and averages for the climate stations and dates listed. For additional climate data access the National Water and Climate Center at <http://www.wcc.nrcs.usda.gov>

	From	To
Freeze-free period (28 deg)(days): (9 years in 10 at least)	134	176
Last Killing Freeze in Spring (28 deg): (1 year in 10 later than)	May 14	Apr 28
Last Frost in Spring (32 deg): (1 year in 10 later than)	May 24	May 08
First Frost in Fall (32 deg): (1 year in 10 earlier than)	Sep 11	Oct 01

First Killing Freeze in Fall (28 deg): (1 year in 10 earlier than)	From Sep 16	To Oct 12
Length of Growing Season (32 deg)(days): (9 years in 10 at least)	118	152
Growing Degree Days (40 deg):	4880	6530
Growing Degree Days (50 deg):	2850	4420
Annual Minimum Temperature:	-20	-5
Mean annual precipitation (inches):	15	22

Monthly precipitation (inches) and temperature (F):

2 years in 10:	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Precip. Less Than	0.11	0.07	0.24	0.41	1.22	1.27	1.03	1.00	0.56	0.14	0.14	0.14
Precip. More Than	0.90	0.97	2.53	2.91	5.47	4.80	4.49	3.13	3.10	2.01	1.43	0.97
Monthly Average:	0.42	0.46	1.29	1.66	3.32	3.07	2.78	2.14	1.64	1.01	0.72	0.45
Temp. Min.	8.6	14.2	23.1	34.0	44.7	54.4	60.6	57.8	46.5	33.6	21.2	11.2
Temp. Max.	45.5	51.3	60.4	70.8	78.7	88.7	93.6	91.2	83.2	73.2	57.7	47.1
Temp. Avg.	27.9	33.2	40.8	51.4	61.0	71.2	77.2	74.8	65.4	53.8	39.7	30.1

<u>Climate Station</u>	<u>Location</u>	<u>From</u>	<u>To</u>
KS8038	Syracuse, KS	1961	1990
NE6065	North Platte, NE	1961	1990
KS0439	Atwood, KS	1961	1990
KS5127	McDonald, KS	1961	1990
CO4082	Holyoke, CO	1961	1990
NE4110	Imperial, NE	1961	1990
NE4900	Lodgepole, NE	1961	1990
KS3554	Healy, KS	1961	1990
KS3837	Hoxie, KS	1961	1990
KS7397	Sharon Springs, KS	1961	1990
CO1121	Burlington, CO	1961	1990
KS7922	Sublette, KS	1961	1990

Soil Interpretations

The subirrigated group predominately consists of very deep, somewhat poorly drained, coarse to moderately fine textured soils. They have a seasonal water table within 12 to 48 inches of the surface during part of the growing season. Some of these soils may be slightly saline.

Drainage Class:	Poorly drained	To	Moderately well drained
Permeability Class: (0 - 40 inches)	Slow	To	Moderately rapid
Frost Action Class:	Moderate	To	High

	<u>Minimum</u>	<u>Maximum</u>
Depth:	72	
Surface Fragments >3" (% Cover):	0	0
Organic Matter (percent): (surface layer)	0.0	6.0
Electrical Conductivity (mmhos/cm): (0 - 24 inches)	0	8
Sodium Absorption Ratio: (0 - 12 inches)	0	9

	<u>Minimum</u>	<u>Maximum</u>
Soil Reaction (1:1) Water (pH): (0 - 12 inches)	5.6	8.4
Available Water Capacity (inches): (0 - 60 inches)	4	12
Calcium Carbonate Equivalent (percent): (0 - 12 inches)	0	13

Mapunit Component List (Some phases of these soils may also occur in other FSGs)

Alda	Gibbon	Lex	Silver creek
Bolent	Lamo	Merrick	Sweetwater
Caruso	Las	Norwest	Wann
Elsmere	Lawet	Platte	

Adapted Species List

The following forage species are considered adapted to grow on the soils in this group. Additional information concerning plant characteristics of a number of the listed species as well as individual cultivars of many of those species can be accessed on the web at <http://plants.usda.gov/>

<u>Cool Season Grasses</u>	<u>Plant Symbol</u>	<u>Adaptation</u>	<u>Note</u>
Canada wildrye	ELCA4	F	
Creeping foxtail	ALAR	F	North of NE/KS border only
Crested wheatgrass	AGCR	F	
Intermediate wheatgrass	THIN6	G	
Pubescent wheatgrass	THIN6	G	
Reed canarygrass	PSJU3	F	North of NE/KS border only
Smooth bromegrass	BRINI2	F	
Tall wheatgrass	THPO7	G	
Western Wheatgrass	PASM	F	

<u>Warm Season Grasses</u>	<u>Plant Symbol</u>	<u>Adaptation</u>
Big bluestem	ANGE	F
Indiangrass	SONU2	G
Little bluestem	SCSC	G
Sideoats grama	BOCU	F
Switchgrass	PAVIV	G

<u>Legumes</u>	<u>Plant Symbol</u>	<u>Adaptation</u>	
Alfalfa	MESA	F	
Alsike clover	TRHY	F	North of NE/KS border only
Cicer milkvetch	ASCI4	G	
Red clover	TRPR2	F	North of NE/KS border only

G - Good adaptation for forage production on this group of soils in this MLRA

F - Fair adaptation but will not produce at its highest potential

Production Estimates

Production estimates listed here should only be used for making general management recommendations. On site production information should always be used for making detailed planning and management recommendations.

PASTURE AND HAYLAND INTERPRETATIONS

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The high forage production estimates listed below are based on dense, vigorous stands of climatically adapted, superior performing cultivars. They are properly fertilized for high yields, and pest infestations are kept below economic thresholds. Mechanical harvests are managed to maintain stand life by cutting at appropriate stages of maturity and harvest intervals. If grazed, optimum beginning and ending grazing heights are adhered to. Adequate time is allowed for plant recovery before entering winter dormancy under both uses.

The production estimates listed below represent total annual above ground plant production on an air-dry-matter basis. Estimates of hay and grazing yields can be calculated from these numbers by multiplying them by a harvest efficiency. A 70 percent harvest efficiency is commonly used when converting to hay yields. Pasture harvest efficiency is highly dependent on the grazing management system applied, ranging from 25 to 50 percent.

Forage Crop	Management Intensity	
	Low (lbs/ac)	High (lbs/ac)
Alfalfa	1400	11400
Alfalfa/Cool Season Grass	1400	10000
Intermediate wheatgrass	1400	4900
Switchgrass	1400	5700

Forage Growth Curves

Growth curves estimate the seasonal distribution of growth of the various forage crops. They indicate when the forages may be available for grazing or mechanical harvest.

Growth Curve Number: KS0003
Growth Curve Name: Warm-season grass
Growth Curve Description: Statewide

<u>Percent Production by Month</u>											
<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
0	0	0	0	15	35	30	15	5	0	0	0

Growth Curve Number: KS0005
Growth Curve Name: Alfalfa
Growth Curve Description: MLRAs 73, 72 dryland

<u>Percent Production by Month</u>											
<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
0	0	0	0	35	35	20	10	0	0	0	0

Growth Curve Number: KS0006
Growth Curve Name: Cool-season grass fertilized early
Growth Curve Description: MLRAs 73, 72 dryland

<u>Percent Production by Month</u>											
<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
0	0	0	10	40	35	0	5	10	0	0	0

Soil Limitations

Water Table

- Forage species like alfalfa that are less tolerant of high watertables for extended periods of time may suffer stand loss during wet years when watertables stay abnormally high.

Flooding

- Flooding is a potential hazard to many of these soils.

Management Interpretations

Watertable and Flooding

- When establishing new stands select species that are tolerant of high water tables or occasional flooding, and that are also capable of utilizing the additional moisture inherent to these soils.

FSG Documentation

Inventory Data References:

Agriculture Handbook 296-Land Resource Regions and Major Land Resource Areas
Natural Resources Conservation Service (NRCS) National Water and Climate Center data
USDA Plant Hardiness Zone maps
National Soil Survey Information System (NASIS) database for soil surveys in Kansas, Nebraska, and Colorado counties in MLRA 72
Kansas, Nebraska, and Colorado NRCS Field Office Technical Guides
NRCS National Range and Pasture Handbook
Various Agricultural Research Service, Cooperative Extension Service, and NRCS research trials for plant adaptation and production.

State Correlation:

This site has been correlated with the following states:

CO
KS
NE

Forage Suitability Group Approval:

Original Author: Tim Nordquist

Original Date:

Approval by:

State Range Management Specialist

Date

State Range Management Specialist

Date